

## *Sorex merriami*. By David M. Armstrong and J. Knox Jones, Jr.

Published 19 January 1971 by The American Society of Mammalogists

### *Sorex merriami* Dobson, 1890 Merriam's Shrew

*Sorex merriami* Dobson, 1890: part 3, fasc. 1, pl. 23, fig. 6.  
Type locality [1½ mi.] above Fort Custer [Hardin], Big Horn Co., Montana.

**CONTEXT AND CONTENT.** Order Insectivora, Family Soricidae, Subfamily Soricinae, Tribe Soricini. The genus *Sorex* includes approximately 40 species. Two subspecies of *S. merriami* currently are recognized:

*S. m. merriami* Dobson, 1890 (see above).

*S. m. leucogenys* Osgood, 1909:52. Type locality mouth of canyon of Beaver River, about 3 mi. E Beaver, Beaver Co., Utah. Originally described as a monotypic species; first regarded as a subspecies of *merriami* by Benson and Bond (1939).

**DIAGNOSIS.** Size small for genus, color pale above and below; skull (see figure 1) relatively broad, short; braincase flattened, not rising above plane of rostrum; interorbital region relatively high, swollen; rostrum broad, truncate; dentition heavy, densely pigmented, molars as broad as long, second unicuspid largest and third larger than fourth (see figure 2).

**GENERAL CHARACTERS.** Total length 96.3 mm. (88 to 107), tail 36.2 (33 to 42), hind foot 12.2 (11 to 13), data

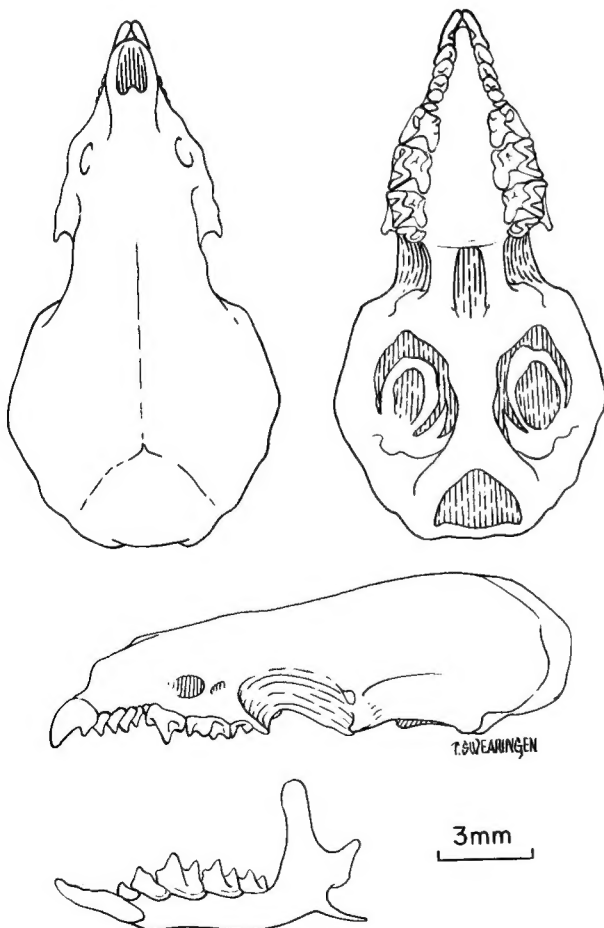


FIGURE 1. Dorsal, ventral, and lateral views of skull, and lateral view of lower jaw of *Sorex merriami*, KU 102986, female, from 3 mi. S Rushville, Sheridan Co., Nebraska.

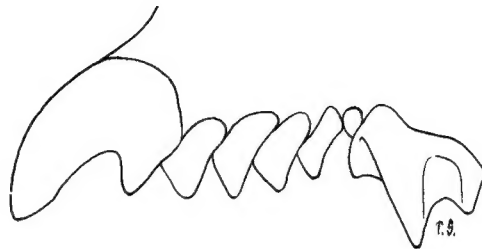


FIGURE 2. Enlarged view of anterior portion of toothrow of *Sorex merriami*; same specimen as illustrated in figure 1.

based on published measurements of specimens from throughout the range of the species; color in summer grayish drab above, becoming paler on flanks, underparts nearly white, faintly tinged with buff; winter pelage brighter, drab above, paler below; tail markedly bicolored, sparsely haired and drab above, white below; condylobasal length 16.3 mm. (15.7 to 17.1), palatal length 6.8 (6.3 to 7.3), cranial breadth 8.3 (7.8 to 8.8), interorbital breadth 3.7 (3.3 to 4.0), maxillary breadth 5.2 (4.9 to 5.5), maxillary toothrow 5.9 (5.6 to 6.5); dentition i 3/1, c 1/1, p 3/1, m 3/3; weight 5.9 gm. (4.4 to 6.5). Longer descriptions may be found in Merriam (1895) and Jackson (1928).

**DISTRIBUTION.** Records of occurrence are shown in figure 3. The known ecological range is within the Upper Sonoran and lower part of the Transition life zones; the alti-

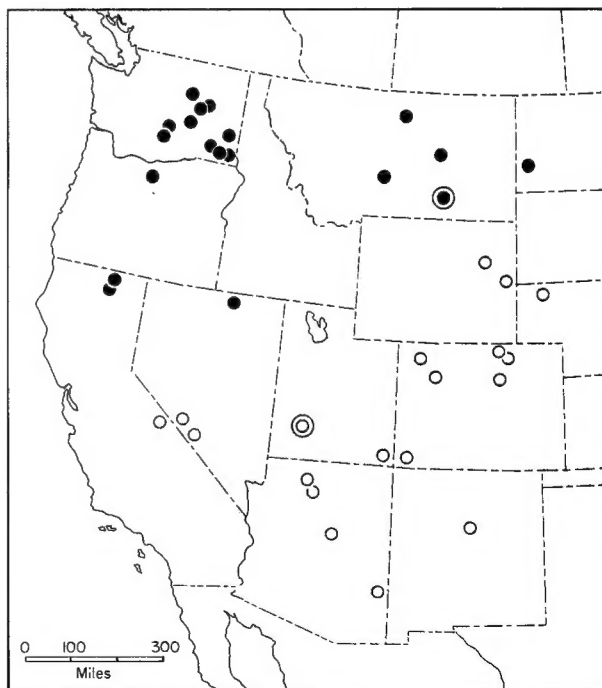


FIGURE 3. Records of occurrence of *Sorex merriami* in the western United States of America. Solid symbols represent the subspecies *S. m. merriami*; open symbols represent *S. m. leucogenys*. The type localities of the two subspecies are encircled.

tudinal range is from approximately 650 feet (Washington) to 9500 feet (California). No fossils have been reported.

**ECOLOGY.** *Sorex merriami* appears to occupy drier habitats than other members of the genus. The greatest numbers from any one area are from stands of *Artemisia* (sagebrush) in eastern Washington (James, 1953; Johnson and Clanton, 1954; Hudson and Bacon, 1956). It has been taken in comparable situations in California (Hoffmann, 1955), Colorado (Starrett and Starrett, 1956), Montana (Hooper, 1944), Utah (Osgood, 1909), and Wyoming (Long and Kerfoot, 1963). Other habitats in which Merriam's shrew has been collected include: grasslands in Wyoming (Brown, 1968) and Nebraska (McDaniel, 1967); stands of *Cercocarpus* (mountain mahogany) in Wyoming (Brown, 1967) and Colorado (Spencer and Pettus, 1966); piñon woodlands in Colorado (Hoffmeister, 1956); and *Pinus-Pseudotsuga-Populus* woodlands in Arizona (Hall, 1933; Hoffmeister, 1955). Hoffmeister (1967) reported remains of *S. merriami* in pottery jars in an archaeological site at Mesa Verde National Park, Colorado, and concluded that the shrews must have been intentionally collected by the prehistoric inhabitants of the area.

Runways and burrows of microtine rodents appear to be utilized extensively in foraging activities. Johnson and Clanton (1954) reported a close association with the sagebrush vole, *Lagurus curtatus*, in Washington, and Hooper (1944) noted the use of runways of *Microtus* along fencerows in Montana. Brown (1967) took *S. merriami* with *Lagurus* at localities where *Artemisia* was predominant, and also where *Cercocarpus* was the principal vegetation but where *Lagurus* was absent. Most specimens have been captured in sunken cans or with unbaited snap-traps.

Food habits were investigated by Johnson and Clanton (1954). Contents of 11 stomachs included spiders, adult and larval beetles, cave crickets, larval lepidopterans, and ichneumonid wasps. Caterpillars appeared to be the most common food item during the warmer months.

Reports of the remains of *S. merriami* from owl pellets from California (Bond, 1939) and Wyoming (Long and Kerfoot, 1963) constitute the only documented instances of predation on the species. Johnson and Clanton (1954) reported parasitism by fleas, nematodes, and cestodes.

Distinct summer and winter pelages were described by Johnson and Clanton (1954). Spring molt occurred from March through June and autumnal molt from late September to early November. In spring, molt began on the flanks and progressed toward the dorsum and venter; in autumn the sequence generally was reversed.

Johnson and Clanton (1954) noted pregnant females from mid-March through early July in Washington. Three females carried 5, 6, and 7 embryos. Males with enlarged testes were captured from early March to early June. Flank glands of the males were prominent from April to June; these naked areas are larger (3 by 7 mm.) in *S. merriami* than in any other North American shrew except *Notiosorex crawfordi* (Hoffmann, 1955). The glands are thought to be responsible for the strong odor of the animals during the breeding season. Johnson and Clanton (1954) and Hoffmann (1955) have speculated on the function of this scent.

**REMARKS.** *Sorex melanogenys* Hall (1932) was originally described as a member of the "*Sorex merriami* group." Later, Hall (1934) recognized *melanogenys* as a synonym of *Sorex vagrans monticola* Merriam.

No published information is available on the ontogeny, myology, postcranial osteology, population structure, or genetics of *S. merriami*.

**ETYMOLOGY.** *Sorex* is the classical Latin term for shrew. The specific name *merriami* is commemorative, pro-

posed in honor of C. H. Merriam (1855-1942), first Chief of the United States Biological Survey; *leucogenys* is derived from the Greek words *leucos* and *genys*, "white cheek."

## LITERATURE CITED

- Benson, S. B., and R. M. Bond. 1939. Notes on *Sorex merriami* Dobson. Jour. Mammal., 20:348-351.
- Bond, R. M. 1939. Observations on raptorial birds in the Lava Beds-Tule Lake region of northern California. Condor, 41:54-61.
- Brown, L. N. 1967. Ecological distribution of six species of shrews and comparison of sampling methods in the Central Rocky Mountains. Jour. Mammal., 48:617-622.
- Dobson, G. E. 1890. Monograph of the Insectivora, systematic and anatomical, vol. 3. British Museum (Natural History), London.
- Hall, E. R. 1932. A new shrew of the *Sorex merriami* group from Arizona. Jour. Mammal., 13:259-262.
- 1933. *Sorex leucogenys* in Arizona. Jour. Mammal., 14:153-154.
- 1934. *Sorex melanogenys* Hall, a synonym of *Sorex vagrans monticola* Merriam. Jour. Mammal., 15:155.
- 1946. Mammals of Nevada. Univ. California Press, Berkeley, xi + 710 pp.
- Hall, E. R., and K. R. Kelson. 1959. The mammals of North America. Ronald Press, New York, 1:xxx + 1-546, + 79.
- Hoffmann, R. S. 1955. Merriam shrew in California. Jour. Mammal., 36:561.
- Hoffmeister, D. F. 1955. Mammals new to Grand Canyon National Park. Plateau, 28:1-7.
- 1956. A record of *Sorex merriami* from northeastern Colorado. Jour. Mammal., 37:276.
- 1967. An unusual concentration of shrews. Jour. Mammal., 48:462-464.
- Hooper, E. T. 1944. Additional records of the Merriam shrew in Montana. Jour. Mammal., 25:92.
- Hudson, G. E., and M. Bacon. 1956. New records of *Sorex merriami* for eastern Washington. Jour. Mammal., 37:436-438.
- James, W. B. 1953. The Merriam shrew in Washington State. Jour. Mammal., 34:121.
- Jackson, H. H. T. 1928. A taxonomic review of the American long-tailed shrews. N. Amer. Fauna, 51:1-238.
- Johnson, M. L., and C. W. Clanton. 1954. Natural history of *Sorex merriami* in Washington State. Murrelet, 35:1-4.
- Long, C. A., and W. C. Kerfoot. 1963. Mammalian remains from owl-pellets in eastern Wyoming. Jour. Mammal., 44:129-131.
- McDaniel, L. L. 1967. Merriam's shrew in Nebraska. Jour. Mammal., 48:493.
- Merriam, C. H. 1895. Synopsis of the American shrews of the genus *Sorex*. N. Amer. Fauna, 10:57-100.
- Osgood, W. H. 1909. The status of *Sorex merriami*, with description of an allied new species from Utah. Proc. Biol. Soc. Washington, 22:51-53.
- Spencer, A. W., and D. Pettus. 1966. Habitat preferences of five sympatric species of long-tailed shrews. Ecology, 47:677-683.
- Starrett, A., and P. Starrett. 1956. Merriam shrew, *Sorex merriami*, in Colorado. Jour. Mammal., 37:276-277.

The editor for this account was S. ANDERSON.

D. M. ARMSTRONG AND J. K. JONES, JR., THE MUSEUM OF NATURAL HISTORY, UNIVERSITY OF KANSAS, LAWRENCE, KANSAS 66044.